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Supporting medication intake of the elderly with robot technology

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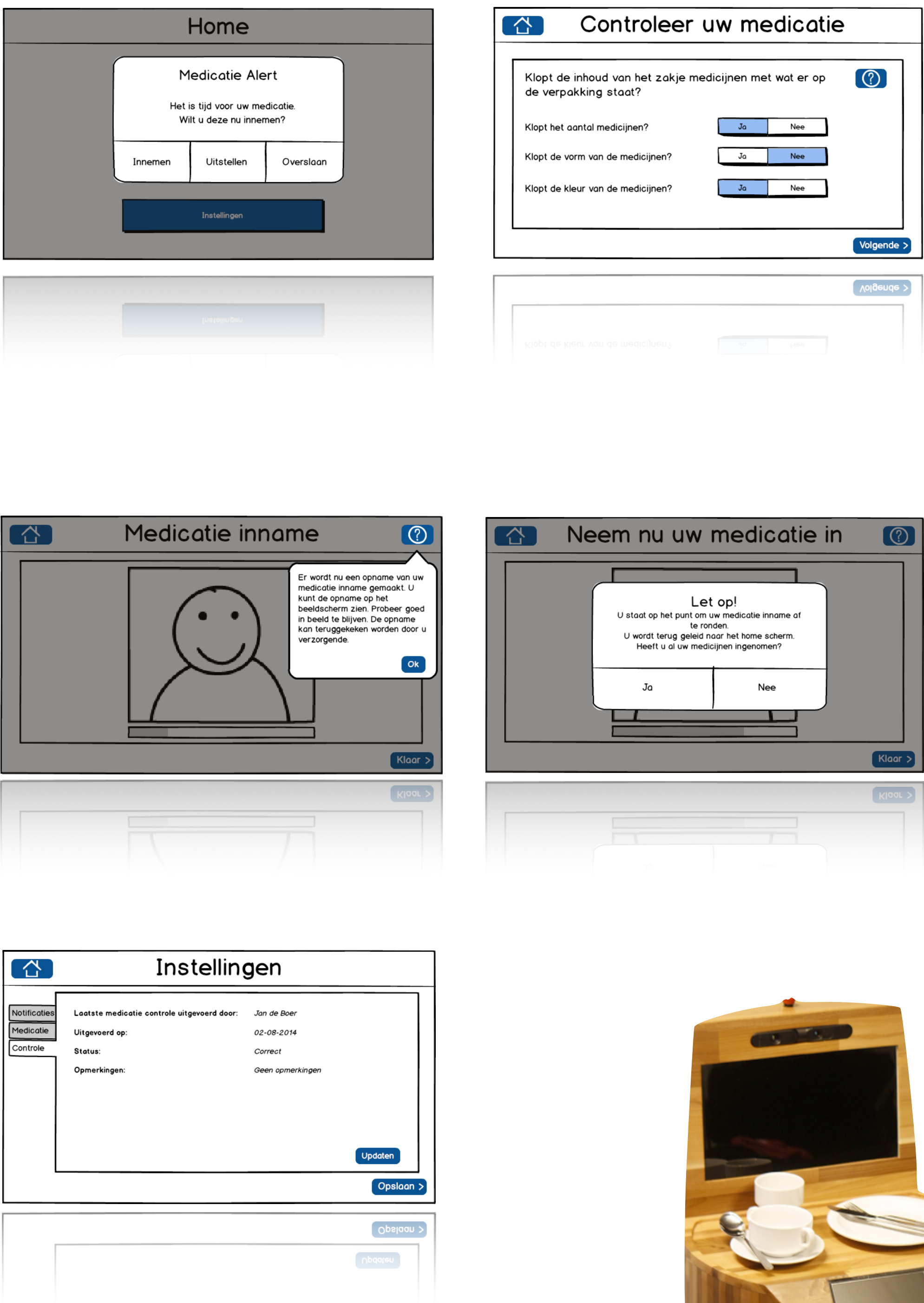
SHORTEST SUMMARY

- RITA is a **robot** to **assist** the **elderly** in daily activities
- We developed and evaluated an interface for RITA
 - to **remind elderly** about **medication intake**
 - on a **touch screen**
- The **main findings** were:
 - users **understood** the interface
 - users were **able to take medication** with the touch screen support
 - many were **unable** to perform slightly **more advanced functions**
- The **main conclusions** / recommendations were:
 - interfaces should be as **simple** as possible
 - usability** tests should be routine in developing health technology for the elderly

AIM OF THE STUDY

- To develop a **robot interface** to assist the elderly with their medication intake.
- To investigate whether the target group is willing to **accept** medication intake **assistance** from a robot

MEDICATION INTAKE INTERFACE



THE ROBOT RITA

- RITA is an **intelligent**, moving wooden **table**
 - accompanies** people in their own home
 - assists** in activities of **daily living**
- RITA continuously **monitors** the client
- RITA analyses **behavioral patterns** to
 - detect** uncommon situations
 - alarms** health care personnel to check the situation
- RITA can **serve food and drinks** to clients and visitors
- RITA functions **autonomously**
 - clients have no need to give direct orders to RITA: RITA will already know what to do
- RITA can be operated directly by using the **touch screen** on the front of the robot
- RITA was designed to **blend in** with existing furniture and not to stand out
 - it does *not* have a futuristic look but is instead a wooden table
 - market research has shown that older people **appreciate the classic look**
- RITA supports health care professionals to make sure they are able to provide their clients with maximum comfort and quality of life relieving them of certain repetitive tasks and aiding them in more complex tasks

MAIN RESULTS OF USER STUDY

Usability test

- The majority of participants in this study (17 out of 19) were **able to take their medication** with assistance of the interface
- Participants found it **difficult to work with more advanced interface settings**
 - setting notifications interval
 - changing pharmacy's contact details
- Post-Study **Usability** Questionnaire (Likert 5-point scale)
 - Users rated usability **positively**
 - mean score of 3.9 (between 'Neutral' and 'Agree')

Robot Acceptance

- Robot Acceptance** Questionnaire (Likert 5-point scale)
 - User accepted help from the robot
 - mean score of 3.5 ('Neutral')

CONCLUSIONS & RECOMMENDATIONS

Conclusion

- The basic functionality of the **interface** was **easy to use** for the elderly for assistance with the medication intake task
- Elderly are willing to **accept assistance of a robot** with this task

Recommendations

- Interfaces for the elderly should really be as simple as possible**
- Testing of usability** aspects during the design process is **vital** for a well-designed robot

BACKGROUND

- Medication intake** can prove to be a **complicated task** for the **elderly**.
- Roughly **50%** of all prescribed medication is **taken incorrectly** (MacLaughlin, et al., 2005)
- Simplification of this task might have beneficial effects** on this group's general health and society's healthcare costs
- Together with Enacer Company we developed an **assistive robot** for the elderly, called **RITA** (the Reliable Interactive Table Assistant).

DESIGN PROCESS

Interviews with caregivers

Main result:

- it is especially **important** to **check** whether the elderly **actually take** their medication

Focus group of elderly

- feedback on the **clarity** of the design
- requirements** analysis

Main result:

- Font size** should be **increased** for optimal utility

Interface development

- The interface was developed in HTML5

User study

- Usability test** of the the interface on the touch screen
 - subjects were asked to perform a number of tasks related to the intake of medication
 - basic task : supervision of medication intake
 - more advanced functions: change settings
- Acceptance questionnaire**